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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,616	08/22/2003	Ching-Hsiang Chan	4006-263	8269
22429	7590	06/21/2006	EXAMINER	
LOWE HAUPTMAN BERNER, LLP 1700 DIAGONAL ROAD SUITE 300 ALEXANDRIA, VA 22314			SCHATZ, CHRISTOPHER	
			ART UNIT	PAPER NUMBER
			1733	

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,616

Applicant(s)

CHAN ET AL.

Examiner

Christopher T. Schatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-12 and 15-~~19~~²⁰ is/are pending in the application.
- 4a) Of the above claim(s) 3 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 6-12, 15, 16, 18 and 19^{and 20} is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The amendment filed April 12, 2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Applicant states that “at least one bugle is extended out from a sidewall of said bottom opening.” The original disclosure only states that a bulge for controlling the arrangement of the spacers can be present in the trench. The original disclosure *does not* disclose that the bulge “is extended out from a sidewall of said bottom opening.”

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 2, 4, 6-12, 15, 16, and 18-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had

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possession of the claimed invention. Claim 1 requires that “at least one bugle is extended out from a sidewall of said bottom opening.” Applicant does not have support to make such a claim. The original disclosure only states that a bulge for controlling the arrangement of the spacers can be present in the trench. The original disclosure *does not* disclose that the bulge “is extended out from a sidewall of said bottom opening.”

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4, 6, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. '997 in view of Balz et al. '025.

Minowa et al. discloses a method of locating spacers 1 on a substrate, said method comprising: providing a mould 25 with a plurality of trenches 26 wherein each said of said trenches penetrate said mould and has a top and bottom opening, wherein said top opening is larger than said bottom opening (figures 2, 3, 8); locating a plurality of spacers 1 on said mould and vibrating said mould to make said spacers fall into said trenches (column 6, lines 4-10); coating a glue 23b on a first substrate 22b (column 5, lines 30-37); bringing said first substrate into contact with said mould to make said spacers adhere to said first substrate (figure 6, column

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6, lines 42-49); and removing said spacers from said trenches (figures 3, 4). The reference is silent as to a bulge.

Balz et al. discloses a method of locating spacers on a substrate 36, said method comprising: forming a plurality of trenches in a mould wherein each of said trenches penetrate the mould and has a top and bottom opening (figure 8, column 9, lines 9-25), and at least one bulge 22 (figure 4) is extended out from a sidewall of said bottom opening, wherein said bulge limits said spacer to arrange in a “special location” of said trench. Applicant should note that the term “special location” is interpreted by examiner to mean the location that the spacer is limited to in the trench as a result of said bulge being present. The presence of said bulge increases the accuracy of the placement of said spacer (column 6, lines 20-66, column 2, line 60 – column 3, line 22). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the method of Minowa et al. by using a bulge extended out from a side wall of said bottom opening as taught by Balz et al. above. Such a modification would cause the spacers of Minowa et al. to be more accurately located in each respective trench, thus increasing the uniformity in spacing between each spacer on the substrate.

As to claim 4, Minowa et al. discloses a method of locating spacers on a substrate wherein said method further comprises temporarily fixing said spacers in said trenches when said spacers fall into said trenches (column 6, lines 18-24, lines 50-57). As to claim 6, Minowa et al. discloses a method of locating spacers on a substrate further comprising providing a second substrate 22a, wherein said second substrate is brought into contact with said mould and a viscous substance 23a is formed on said second substrate for temporarily fixing said spacers when said spacers fall into said trenches (column 6, lines 4-24, 50-57). As to claim 12, Minowa

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et al. discloses a method of locating spacers on a substrate wherein said spacer is rectangular (figures 2, 3, claim 1).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. and Balz et al. as applied to claims 1 and 4 above and in view of Green et al. (US 2003/0207644).

Minowa et al. and Balz et al. disclose a method as stated in claims 1 and 4, but the references are silent as to a method wherein fluid is used to locate spacers on a mould. Green et al. discloses a method of forming components 40 on a substrate 10, said substrate comprising a plurality of trenches 30, wherein fluid used to locate the components on a mould, and the mould is vibrated to make the components fall into the trenches (paragraph 0010, 0053, 0059). Green et al. further discloses that using fluid a location means is well-known in the art, and advantageous because components are spread across the substrate such that a component falls within each said trench (paragraph 0053). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use fluid to locate spacers on the mould as taught by Green

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et al. above in the process of forming spacers on a substrate as set forth above by Minowa et al. and Balz et al.

As to claim 9, Green et al. discloses a method wherein an electrostatic charge is used to fix components in their respective trenches. Using an electrostatic charge is advantageous because, as disclosed by Green et al., doing so aids in properly holding said components in the trenches (paragraph 0010). Additionally, an electrostatic is a well-known alternative fixing method to using an adhesive (paragraph 0036). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art provide a static electricity fixing apparatus to fix spacers having fallen in trenches as taught by Green et al. above in the method of forming spacers on a substrate as set forth above by Minowa et al. and Balz et al.

6. Claims 7, 8, 15, and 20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. and Balz et al. as applied to claim 1 above, and in further view of Anker et al. '679.

Minowa et al. and Balz et al. disclose a method as stated in claim 1, but the references are silent as to a method wherein the viscous substance is neutralized by UV light. Anker et al. discloses a method wherein UV light is used to neutralize an adhesive layer, and a laminate is then removed from said neutralized adhesive layer (column 5, lines 31-45, column 6, lines 40-43, column 8, line 66 – column 9, line 12). The reference further discloses that using UV light to neutralize an adhesive layer is widely used in the electronics industry because it is simple process that does not require any special equipment (column 5, lines 38-43). Thus, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use UV light

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to illuminate the and neutralize an adhesive layer on a substrate as taught by Anker et al. above in the process of forming spacers on a substrate as set forth above by Minowa et al. and Balz et al.

As to claim 8, examiner established above that it is obvious to modify the method of Minowa et al. and Balz et al. by using a UV light to neutralize an adhesive layer. Additionally, Minowa et al. discloses it would have been obvious to one of ordinary skill in the art to remove the spacers disclosed by Minowa et al. after neutralization of the adhesive layer. As to claim 15, Minowa et al. discloses a method of locating spacers 1 on a substrate, said method comprising: forming a plurality of trenches 26 in a mould 25, wherein said trenches penetrate said mould (figures 2, 3); coating a viscous substance on a first substrate (column 5, lines 32-34); bonding said first substrate to said mould, wherein the trenches on the mould partially expose said viscous substance (figures 2, 3), locating a plurality of spacers 1 on said mould and vibrating said mould to make said spacers fall into said trenches (column 6, lines 4-10); wherein said spacers are temporarily fixed in said trenches by said viscous substance (column 6, lines 18-24, lines 50-57); coating a glue on a second substrate (column 5, lines 30-37); bringing said first substrate into contact with said mould to make said spacers adhere to said second substrate (figure 6), column 6, lines 42-49); and removing said spacers from said trenches (figure 3 - figure 4). Examiner discussed above why it would have been obvious to modify Minowa et al. by using a bulge as disclosed by Balz et al. Both references are silent as to a step wherein UV light is used to neutralize the viscous layer. This limitation is the same as claim 7 and examiner stated above why Anker et al. meets this limitation and further presented reasons as to why one of ordinary skill in the art would have been motivated to combine Anker et al. with Minowa et al. and Balz

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et al. Thus, the claim is rendered obvious. Claim 20 is analogous to claim 12. Applicant is referred to the discussion of claim 12 above for the reasons as to why the Minowa et al. meets the limitation of said claim.

7. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. and Balz et al. as applied to claim 1 above, and in further view of Cathey et al (US 2001/0054866).

Minowa et al. and Balz et al. disclose a method as stated in claim 1, but the references are silent as to a method wherein the spacer is a cruciform. Cathey et al. discloses a method of locating spacers on a substrate wherein said spacer is a cruciform (figure 4a). The reference further discloses that use of a cruciform is a well-known alternative to a rectangular cruciform and advantageous because it provides support to stresses exerted on the spacers (paragraph 0078). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use a spacer shaped like a cruciform as taught by Cathey et al. above in the process of spacers on a substrate as set for the above by Minowa et al and Balz et al. As to claim 11, examiner asserts that it would have been obvious to one of ordinary skill in the art for a cruciform spacer to be arranged in the diagonal of a trench such that said cruciform shaped spacer can properly fit in said trench.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al., Balz et al., and Anker et al. as applied to claim 15 above, and in further view of Green et al. (US 2003/0207644).

Minowa et al., Balz et al., and Anker et al. disclose a method as stated in claim 1, but the references are silent as to a method wherein fluid is used to locate spacers on a mould. Green et

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al. discloses a method of using fluid to locate components 40 on a substrate 10, and further discloses said method is advantageous as discussed above. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use fluid to locate spacers on the mould as taught by Green et al. above in the process of forming spacers on a substrate as set forth above by Minowa et al., Balz et al., and Anker et al.

9. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al., Balz et al., and Anker et al. as applied to claim 15 above, and in further view of Cathey et al (US 2001/0054866).

Minowa et al., Balz et al., and Anker et al. disclose a method as stated in claim 15, but the references are silent as to a method wherein the spacer is a cruciform. Cathey et al. discloses a method of locating spacers on a substrate wherein said spacer is a cruciform (figure 4a) and further discloses that use of a cruciform is a well-known and advantageous as discussed in paragraph 7 above. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use a spacer shaped like a cruciform as taught by Cathey et al. above in the process of spacers on a substrate as set for the above by Minowa et al., Balz et al., and Anker et al. As to claim 19, examiner presented reasons as to why the combination of references meet the limitation of the claim in the discussion of claim 11 above.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

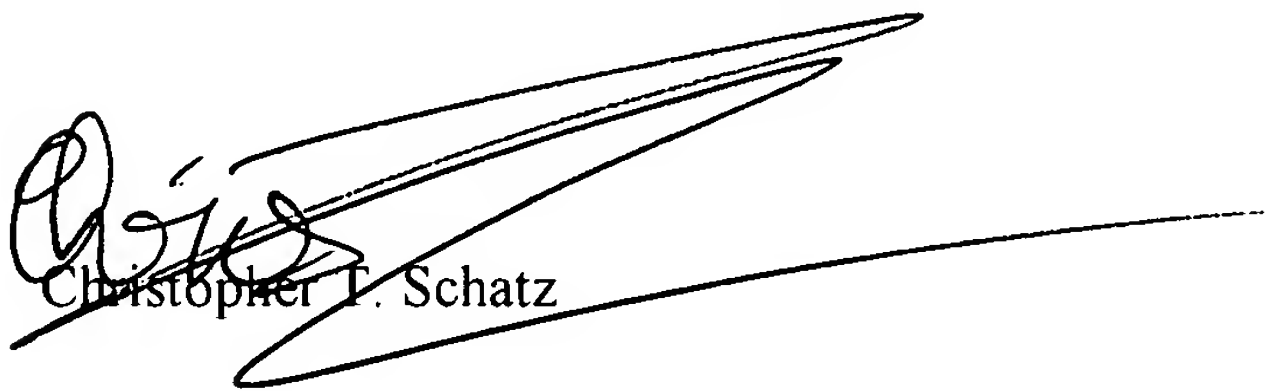
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher T. Schatz whose telephone number is 571-272-1456. The examiner can normally be reached on 8:00-5:30, Monday -Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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